Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in this Application:

Listing of Claims:

1. (Currently amended) A method for identifying a compound that regulates the activity of autoinducer-2 comprising:

(a) ~~contacting autoinducer-2 with the compound;~~

~~(b) measuring the activity of autoinducer-2 in the presence of the compound and~~ comparing the measured activity of autoinducer-2 ~~obtained~~ in the presence of the compound to the measured activity of autoinducer-2 ~~obtained~~ in the absence of the compound; and

~~(c)~~ (b) identifying ~~a~~ the compound that regulates the activity of autoinducer-2.

2. (Original) The method of claim 1, wherein the autoinducer-2 is 4-hydroxy-5-methyl-2H-furan-3-one.

3. (Currently amended) The method of claim 1, wherein ~~the contacting~~ autoinducer 2 is contacted with the compound *in vivo*.

4. (Currently amended) The method of claim 1, wherein ~~the contacting~~ autoinducer 2 is contacted with the compound *in vitro*.

5. (Original) The method of claim 1, wherein the regulation is by increasing the activity of autoinducer-2.

6. (Original) The method of claim 1, wherein the regulation is by decreasing the activity of autoinducer-2.

7. (Original) The method of claim 1, wherein the compound is a polypeptide.

8. (Original) The method of claim 1, wherein the compound is a small molecule.

9. (Original) The method of claim 1, wherein the compound is a nucleic acid.

10. (Currently amended) A method for identifying an autoinducer-2 analog that regulates the activity of autoinducer-2, comprising:

(a) ~~contacting~~ providing a bacterial cell, or extract thereof, comprising biosynthetic pathways which will produce autoinducer-2 and will produce a detectable amount of light in response to autoinducer-2~~, with the autoinducer analog~~;

(b) contacting the bacterial cell, or extract thereof with an autoinducer 2 analog; and

(c) comparing the amount of light produced by the bacterial cell, or extract thereof, in the presence ~~of the autoinducer-2 with the amount produced in the presence of the autoinducer-2~~ and absence of the autoinducer-2 analog, wherein a change in the production of light is indicative of an autoinducer-2 analog that regulates the activity of autoinducer-2.

11. (Original) The method of claim 10, wherein the autoinducer-2 is endogenous autoinducer-2.

12. (Original) The method of claim 10, wherein the autoinducer-2 is synthesized in a bacterial cell or by an extract thereof.

13. (Original) The method of claim 10, wherein the autoinducer-2 is exogenous autoinducer-2.

14. (Original) The method of claim 10, wherein the contacting is in vitro.

15. (Original) The method of claim 10, wherein the contacting is in vivo.

16. (Original) The method of claim 10, further comprising contacting the bacterial cell, or extract thereof, with autoinducer-2.

17. (Original) The method of claim 10, wherein the regulation is by inhibition of autoinducer-2 activity.

18. (Original) The method of claim 10, wherein the regulation is by enhancement of autoinducer-2 activity.

19. (Original) The method of claim 10, wherein the analog comprises a ribose derivative.

20. (Original) The method of claim 10, wherein the bacterial cell, or extract thereof, further comprises at least one distinct alteration in a gene locus that participates in an autoinducer pathway, wherein the alteration inhibits the production or detection of an autoinducer.

21. (Original) The method of claim 20, wherein the alteration in a gene locus comprises an alteration in the LuxS gene.

22. (Original) The method of claim 20, wherein the alteration in a gene locus inhibits production of autoinducer-2.

23. (Original) The method of claim 20, wherein the alteration in a gene locus comprises an alteration in the LuxN gene.

24. (Original) The method of claim 20, wherein the alteration in a gene locus inhibits detection of autoinducer-1.

25. (Original) The method of claim 20, wherein the alteration is in the LuxN and LuxS loci.

26. (Original) The method of claim 20, wherein the bacterial cell is *V. harveyi* strain MM32.

27. (Original) A method for identifying a compound that regulates the production or activity of autoinducer-2, comprising:

contacting a bacterial cell that produces autoinducer-2 with the compound, and

determining whether autoinducer-2 activity is present in the bacterial cell.

28. (Original) The method of claim 27, wherein autoinducer-2 activity is determined by detecting the inhibition of autoinducer-2 production.

29. (Original) The method of claim 28, wherein autoinducer-2 activity is determined by detecting a signal produced in the presence of autoinducer-2.

30. (Original) The method of claim 29, wherein the method detects an antagonist of autoinducer-2.

31. (Original) The method of claim 30, wherein the method detects a change in luminescence from a reporter bacterial strain.

32. (Original) The method of claim 31, wherein the bacterial strain is of the genus *Vibrio*.

33. (Original) The method of claim 32, wherein the bacterial strain is of the species *Vibrio harveyi*.

34. (Original) The method of claim 33, wherein the bacterial strain is *Vibrio harveyi* BB170.

35. (Original) The method of claim 33, wherein the bacterial strain is *Vibrio harveyi* MM32.

36. (Currently amended) A method for detecting an autoinducer-2-associated bacterial biomarker comprising;

(a) contacting at least one bacterial cell with an autoinducer molecule under conditions and for such time as to promote induction of a bacterial biomarker; and

(b) detecting the bacterial biomarker.

37. (Canceled).

38. (Canceled).

39. (Original) A method for detecting an autoinducer-associated biomarker comprising:

(a) contacting at least one cell with an autoinducer molecule under conditions and for such time as to promote induction of a biomarker; and

(b) detecting the biomarker.

40. (Original) The method of claim 39, wherein the autoinducer is autoinducer-2.

41. (Original) The method of claim 40, wherein the autoinducer-2 is 4-hydroxy-5-methyl-2H-furan-3-one.

42. (Original) A method for identifying a compound that affects autoinducer-2 binding to an autoinducer-2 receptor, comprising:

(a) contacting autoinducer-2 and the autoinducer-2 receptor with the compound to allow autoinducer-2 binding to the autoinducer-2 receptor;

(b) contacting the product of a) with a cell, or cell extract, comprising biosynthetic pathways that produce light in response to autoinducer-2 binding to the autoinducer-2 receptor; and

(c) measuring the effect of the compound on light production, wherein a change in light production in the presence of the compound, compared to light production in the absence of the compound, identifies the compound as one that affects binding of autoinducer-2 to the autoinducer-2 receptor.

43. (Original) The method of claim 42, wherein the compound is selected from the group consisting of competitive inhibitors and suicide inhibitors.

44. (Original) The method of claim 42, wherein the autoinducer-2 receptor is selected from the group consisting of luxP and luxN.

45. (Original) The method of claim 42, wherein the autoinducer-2 is allowed to form a complex with the autoinducer-2 receptor in the absence of the compound.

46. (Original) The method of claim 42, wherein the autoinducer-2/autoinducer-2 receptor complex is bound to a solid support medium.

47. (Original) The method of claim 46 wherein the solid support medium is selected from the group consisting of a column matrix and a microtiter dish well.

48. (Original) The method of claim 47, wherein the autoinducer-2/autoinducer-2 receptor complex is bound to a solid support medium through a linkage selected from the group consisting of amide, ester, and ether.

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